CLAIMS

1. A high frequency heating apparatus comprising:

a unidirectional power source portion for converting a commercial power source in a unidirection;

at least one piece of a semiconductor switching element;

an inverter portion for converting a power from the unidirectional power source portion into a high frequency power by making the semiconductor switching element to ON/OFF;

a boost transformer for boosting an output voltage of the inverter portion;

a high voltage rectifying portion for subjecting an output voltage of the boost transformer to multiplying voltage rectification;

a magnetron for irradiating an output of the high voltage rectifying portion as an electromagnetic wave;

a shunt resistor electrically interposed in series with a portion capable of measuring an output current of the unidirectional power source portion;

a buffer for outputting a voltage generated by making a current flow to the shunt resistor; and

a control portion for controlling ON/OFF of the semiconductor switching element to control constant an output of the buffer to a predetermined value.

2. The high frequency heating apparatus according to Claim 1, wherein the buffer is provided with an operational amplifier having a high input impedance, and the shunt resistor is interposed between input ends of the operational amplifier via a resistor element.

3. The high frequency heating apparatus according to Claim 1, wherein the unidirectional power source portion includes a rectifying element for subjecting an alternating current power source to full-wave rectification, the rectifying element and the semiconductor switching element are attached to a same heat radiating plate, the heat generating plate is formed with a notched portion for ensuring constant distances between respective terminals of the rectifying element and the semiconductor switching element and the heat radiating plate, and the shunt resistor is arranged between the rectifying element and the semiconductor switching element at a vicinity of the heat radiating plate and on a straight line the same as a straight line of the rectifying element and the semiconductor switching element.

4. The high frequency heating apparatus according to Claim 3, wherein the shunt resistor is arranged at inside of the notched portion of the heat radiating plate.

5. The high frequency heating apparatus according to Claim 1, wherein the shunt resistor is a bare resistor wire.

6. The high frequency heating apparatus according to Claim 1, wherein the shunt resistor is arranged along a wind path of a cooling wind flowing above the board.

7. The high frequency heating apparatus according to Claim 6, wherein the shunt resistor is arranged in a direction minimizing an area thereof to which the cooling wind is blown.

8. The high frequency heating apparatus according to Claim 6, wherein a cement resistor for lowering a voltage of the commercial power source to a predetermined voltage is arranged in a direction substantially intersecting with the wind path of the cooling wind.

9. The high frequency heating apparatus according to Claim 6, wherein the cement resistor is arranged on a downstream side of a wind of the shunt resistor.

10. The high frequency heating apparatus according to Claim 1, characterized in further comprising a cement resistor for lowering a voltage of the commercial power source to a predetermined voltage;

wherein the shunt resistor is arranged on the board along a wind path of a cooling wind flowing above the board, and the cement resistor is arranged in a space formed between a cooling fin attached with an electronic part generating heat and the boost transformer and at a position cooled by the cooling wind flowing in a clearance formed between the boost transformer and the board.

11. The high frequency heating apparatus according to Claim 10, wherein the cement resistor is arranged in a direction substantially intersecting with the wind path of the cooling wind.

12. The high frequency heating apparatus according to Claim 1, wherein the shunt resistor is arranged at a conductive through hole on a board.

13. The high frequency heating apparatus according to Claim 12, wherein the shunt resistor is a bare resistor wire and the conductive through hole above the board is formed by an eyelet.

14. The high frequency heating apparatus according to Claim 12, wherein the shunt resistor is provided with a conductive portion at a surrounding and at two faces of the

through hole above the board and the two face conductive portion is soldered.

15. A method of mounting a shunt resistor in a high frequency heating apparatus comprising a unidirectional power source portion for converting a commercial power source into a unidirection, an inverter portion including at least one piece of a semiconductor switching element for converting a power from the unidirectional power source portion into a high frequency power by making the semiconductor switching element ON/OFF, and a shunt resistor for measuring an output current of the unidirectional power source portion, said method comprising the steps of:

separately arranging a rectifying element for subjecting an alternating current power source of the unidirectional power source portion to full-wave rectification and the semiconductor switching element on a same straight line above a printed board; and

arranging the shunt resistor between the rectifying element and the semiconductor switching element and on a straight line the same as a straight line of the rectifying element and the semiconductor switching element.

16. A method of mounting a shunt resistor in a high frequency heating apparatus comprising a unidirectional power

source portion for converting a commercial power source into a unidirection, an inverter portion including at least one piece of a semiconductor switching element for converting a power from the unidirectional power source portion into a high frequency power by making the semiconductor switching element ON/OFF, and a shunt resistor for measuring an output current of the unidirectional power source portion, said method comprising the steps of:

inserting the shunt resistor which is a bare resistor wire into a conductive through hole on a board; and

clinching the shunt resistor to fix to the board.

17. A high frequency heating apparatus comprising:

a rectifying and smoothing portion for generating an inverter power source voltage from the commercial power source;

an inverter portion including a semiconductor switching element for converting a power from the rectifying and smoothing portion into a high frequency power by making the semiconductor switching element ON/OFF;

a shunt resistor for detecting an input current flowing from the rectifying and smoothing portion to the inverter portion;

a direct current power source portion including a zener diode for generating a direct current power source;

a reference value generating portion for generating a reference value for controlling constant the input current from the direct current power source generated by the direct current power source portion; and

a control portion for calculating a difference between the reference value and a value of the input current based on the reference value generated by the reference value generating portion and controlling the inverter portion by adding the difference between the reference value and the input current value at least above a printed board,

wherein the shunt resistor is provided with a temperature characteristic the same as or proximate to a temperature characteristic of the zener diode.

18. The high frequency heating apparatus according to Claim 17, wherein the shunt resistor is arranged at a vicinity of the zener diode above the printed board.

19. The high frequency heating apparatus according to Claim 17, wherein the shunt resistor is arranged above the printed board and at a location under a temperature atmosphere proximate to a temperature atmosphere at a location of arranging the zener diode.